

THE INVENTION CLAIMED IS:

1. A method of conducting a live combinatorial exchange comprising:
  - (a) receiving from each of a plurality of bidders at least one bid comprised of at least one item, an initial quantity of each item, and a price for all of the item(s) and their quantities;
  - (b) determining an allocation that is optimal for the type of exchange being conducted, wherein said allocation includes a plurality of bids with each bid of said allocation including all of the items of the bid and at least part of the initial quantity of each item;
  - (c) causing at least a portion of each bid of said allocation to be displayed to each bidder of a first subset of the bidders that has at least one bid that is not included in said allocation;
  - (d) receiving from each bidder of a subset of the first subset of bidders at least one of a new bid and an amendment to an existing bid of the bidder; and
  - (e) repeating steps (b)-(d) until a predetermined condition is satisfied.
2. The method of claim 1, wherein each item includes one of a tangible good, a service and money.
3. The method of claim 1, wherein the predetermined condition includes at least one of (i) a lapse of a predetermined time interval from commencement of the exchange, (ii) a manual abort, and (iii) a sum of the prices of the bids of the allocation reaching a predetermined value.
4. The method of claim 1, wherein:
  - each bid of a subset of the bids has associated therewith exchange description data (EDD) established by the bidder of said bid (bidder EDD);
  - bidder EDD comprises at least one rule (or constraint) for processing at least one of (i) a bid, (ii) at least one item of a bid, and (iii) a subset of bids that includes all or less than all of the bids when determining the allocation; and
  - step (b) further includes determining the allocation as a function of bidder EDD.

5. The method of claim 4, wherein bidder EDD includes at least one rule related to: bid attribute(s), bid adjustment(s), item attribute(s), item adjustment(s), free disposal, action, cost constraint/requirement, unit constraint/requirement, counting constraint/requirement, homogeneity constraint, mixture constraint, cost/unit condition pricing, quote request and reserve price(s).

6. The method of claim 4, wherein the portion of each bid in step (c) includes at least one of: (i) the at least one item of the bid, (ii) the quantity of the at least one item of the bid, (iii) the price for all of item(s) and their quantities, and (iv) at least a portion of the bidder EDD.

7. The method of claim 1, further including displaying a portion of at least one bid that was determined to be part of the allocation to each bidder of a second subset of bidders that has at least one bid that is part of the allocation.

8. The method of claim 7, wherein:  
each subset of bidders includes (i) all or (ii) less than all of the plurality of bidders; and  
each subset of bids includes (i) all or (ii) less than all of the bids.

9. The method of claim 7, wherein the portion of the at least one bid in step (c) includes at least one of: (i) at least one item of the bid, (ii) the initial or allocated quantity of at least one item of the bid, (iii) the price for all of item(s) and their quantities, and (iv) at least a portion of the bidder EDD.

10. The method of claim 1, wherein the exchange is one of a forward auction and a reverse auction.

11. The method of claim 4, wherein the amendment to the existing bid in step (d) includes at least one of:

the addition of at least one new rule to bidder EDD associated with the existing bid;  
the deletion of at least one rule from bidder EDD associated with the existing bid;

the amendment of a value associated with at least one rule of bidder EDD associated with the existing bid;

the amendment of a value of the quantity of at least one item of the existing bid; and

the amendment of the price for all of item(s) and their quantities.

12. The method of claim 11, further including imposing at least one supervisory constraint that limits at least one of (i) adding at least one rule to a bidder EDD, (ii) deleting at least one rule from a bidder EDD, (iii) relaxing at least one rule of a bidder EDD and (iv) tightening of at least one said rule of a bidder EDD.

13. The method of claim 4, wherein:

step (b) further includes determining the allocation based on EDD established by a bid taker (bid taker EDD); and

step (d) further includes receiving from the bid taker at least one of a new bid taker EDD and an amendment to an existing bid taker EDD of the bid taker, wherein the amendment to the existing bid taker EDD of the bid taker includes at least one of:

adding at least one new rule to the existing bid taker EDD;

deleting at least one rule from the existing bid taker EDD; and

amending a value associated with at least one rule of the existing bid taker EDD.

14. The method of claim 3, further including extending the predetermined time interval in response to receiving a bid that improves the allocation within a predetermined duration of the end of the predetermined time interval.

15. The method of claim 14, wherein:

in an exchange that includes plural bidders and plural bid takers, the allocation improves when (i) the number of items exchanged increases or (ii) a difference between a sum of the prices of the buy bids and a sum of the prices of the sell bids of the allocation increases;

in an exchange that includes a single buyer and plural sellers (reverse auction), the allocation improves if a sum of the prices of the bids of the allocation decreases; and

in an exchange that includes a single seller and plural buyers (forward auction), the allocation improves if a sum of the prices of the bids of the allocation increases.

16. The method of claim 1, further including:

OR'ing all the received bids; and

XOR'ing bids received from one bidder that include at least one item in common.

17. The method of claim 1, wherein:

step (b) further includes determining the allocation as a function of exchange description data (EDD) established by a bid taker (bid taker EDD), wherein bid taker EDD comprises at least one rule (or constraint) for processing at least one of (i) a bid, (ii) at least one item of a bid, and (iii) a subset of the plurality of the bids when determining the allocation; and

step (d) further includes receiving from the bid taker at least one of new bid taker EDD and an amendment to an existing bid taker EDD of the bid taker, wherein the amendment to the existing bid taker EDD of the bid taker includes at least one of:

adding at least one new rule to the existing bid taker EDD;

deleting at least one rule from the existing bid taker EDD; and

amending a value associated with at least one rule of the existing bid taker EDD.

18. The method of claim 17, further including imposing at least one supervisory constraint that limits at least one of (i) adding at least one rule to a bid taker EDD, (ii) deleting at least one rule from a bid taker EDD, (iii) relaxing at least one rule of a bid taker EDD and (iv) tightening of at least one said rule of a bid taker EDD.

19. The method of claim 17, wherein bid taker EDD includes at least one rule related to: objective(s), constraint relaxer(s), feasibility obtainer(s), bid adjustment(s), item attribute(s), item adjustment(s), free disposal, action, cost constraint/requirement, unit constraint/requirement, counting constraint/requirement, homogeneity constraint, mixture constraint, cost/unit condition pricing, quote request and reserve price(s).

20. The method of claim 1, wherein step (c) further includes causing an identification of the bidder of the bid to be displayed.

21. The method of claim 20, wherein the display of the bidder identification is obscured.

22. The method of claim 4, wherein at least one rule is introduced into at least one bidder EDD in response to a bidder specifying (i) a precondition of said rule and (ii) an effect to apply if said precondition is satisfied.

23. The method of claim 17, wherein at least one rule is introduced into at least one bid taker EDD in response to a bid taker specifying (i) a precondition of said rule and (ii) an effect to apply if said precondition is satisfied.

24. A computer readable medium having stored thereon instructions which, when executed by a processor, cause the processor to perform the steps of:

- (a) receive from each of a plurality of bidders at least one bid comprised of at least one item, an initial quantity of each item, and a price for all of the item(s) and their quantities;

- (b) determine an allocation that is optimal for the type of exchange being conducted, wherein said allocation includes a plurality of bids with each bid of said allocation including all of the items of the bid and at least part of the initial quantity of each item;

- (c) display at least a portion of each bid of said allocation to each bidder of a first subset of the bidders that has at least one bid that is not included in said allocation;

- (d) receive from each bidder of a subset of the first subset of bidders at least one of a new bid and an amendment to an existing bid of the bidder; and

- (e) repeat steps (b)-(d) until a predetermined condition is satisfied.

25. The computer readable medium of claim 24, wherein each item includes one of a tangible good, a service and money.

26. The computer readable medium of claim 24, wherein the predetermined condition includes at least one of (i) a lapse of a predetermined time interval from commencement of the

exchange, (ii) a manual abort, and (iii) a sum of the prices of the bids of the allocation reaching a predetermined value.

27. The computer readable medium of claim 24, wherein:

each bid of a subset of the bids has associated therewith an exchange description data (EDD) established by the bidder of said bid (bidder EDD);

bidder EDD comprises at least one rule (or constraint) for processing at least one of (i) a bid, (ii) at least one item of a bid, and (iii) a subset of bids that includes all or less than all of the bids when determining the allocation; and

step (b) further includes determining the allocation as a function of bidder EDD.

28. The computer readable medium of claim 27, wherein bidder EDD includes at least one rule related to: bid attribute(s), bid adjustment(s), item attribute(s), item adjustment(s), free disposal, action, cost constraint/requirement, unit constraint/requirement, counting constraint/requirement, homogeneity constraint, mixture constraint, cost/unit condition pricing, quote request and reserve price(s).

29. The computer readable medium of claim 27, wherein the portion of the at least one bid in step (c) includes at least one of: (i) the at least one item of the bid, (ii) the quantity of the at least one item of the bid, (iii) the price for all of item(s) and their quantities, and (iv) at least a portion of the bidder EDD.

30. The computer readable medium of claim 24, wherein the instructions further cause the processor to display a portion of at least one bid that was determined to be part of the allocation to each bidder of a second subset of bidders that has at least one bid that is part of the allocation.

31. The computer readable medium of claim 30, wherein:

each subset of bidders includes (i) all or (ii) less than all of the plurality of bidders; and  
each subset of bids includes (i) all or (ii) less than all of the bids.

32. The computer readable medium of claim 30, wherein the portion of the at least one bid in step (c) includes at least one of: (i) at least one item of the bid, (ii) the initial or allocated quantity of at least one item of the bid, (iii) the price for all of item(s) and their quantities, and (iv) at least a portion of the bidder EDD.

33. The computer readable medium of claim 24, wherein the exchange is one of a forward auction and a reverse auction.

34. The computer readable medium of claim 27, wherein the amendment to the existing bid in step (d) includes at least one of:

- the addition of at least one new rule to bidder EDD associated with the existing bid;
- the deletion of at least one rule from bidder EDD associated with the existing bid;
- the amendment of a value associated with at least one rule of bidder EDD associated with the existing bid;
- the amendment of a value of the quantity of at least one item of the existing bid; and
- the amendment of the price for all of item(s) and their quantities.

35. The computer readable medium of claim 34, wherein the instructions further cause the processor to impose at least one supervisory constraint that limits at least one of (i) adding at least one rule to a bidder EDD, (ii) deleting at least one rule from a bidder EDD, (iii) relaxing at least one rule of a bidder EDD and (iv) tightening of at least one said rule of a bidder EDD.

36. The computer readable medium of claim 27, wherein the instructions further cause the processor to:

- determine the allocation step (b) based on EDD established by a bid taker (bid taker EDD); and

- receive from the bid taker step (d) at least one of a new bid taker EDD and an amendment to an existing bid taker EDD of the bid taker, wherein the amendment to the existing bid taker EDD of the bid taker includes at least one of:

- the addition of at least one new rule to the existing bid taker EDD;
- the deletion of at least one rule from the existing bid taker EDD; and

the amendment of a value associated with at least one rule of the existing bid taker EDD.

37. The computer readable medium of claim 26, wherein the instructions further cause the processor to extend the predetermined time interval in response to receiving a bid that improves the allocation within a predetermined duration of the end of the predetermined time interval.

38. The computer readable medium of claim 37, wherein:

in an exchange that includes plural bidders and plural bid takers, the allocation improves if (i) the number of items exchanged increases or (ii) a difference between a sum of the prices of the buy bids and a sum of the prices of the sell bids of the allocation increases;

in an exchange that includes a single buyer and plural sellers (reverse auction), the allocation improves if a sum of the prices of the bids of the allocation decreases; and

in an exchange that includes plural buyers and a single seller (forward auction), the allocation improves if a sum of the prices of the bids of the allocation increases.

39. The computer readable medium of claim 24, wherein the instructions further cause the processor to:

logically OR all the received bids; and

logically XOR all bids received from one bidder that include at least one item in common.

40. The computer readable medium of claim 24, wherein the instructions further cause the processor to:

determine the allocation in step (b) as a function of exchange description data (EDD) established by a bid taker (bid taker EDD), wherein bid taker EDD comprises at least one rule (or constraint) for processing at least one of (i) a bid, (ii) at least one item of a bid, and (iii) a subset of the plurality of the bids when determining the allocation; and

receive from the bid taker in step (d) at least one of new EDD and an amendment to an existing EDD of the bid taker, wherein the amendment to the existing EDD of the bid taker includes at least one of:



adding at least one new rule to the existing bid taker EDD;  
deleting at least one rule from the existing bid taker EDD; and  
amending a value associated with at least one rule of the existing bid taker EDD.

41. The computer readable medium of claim 40, wherein the instructions further cause the processor to impose at least one supervisory constraint that limits at least one of (i) adding at least one rule to a bid taker EDD, (ii) deleting at least one rule from a bid taker EDD, (iii) relaxing at least one rule of a bid taker EDD and (iv) tightening of at least one said rule of a bid taker EDD.

42. The computer readable medium of claim 40, wherein bid taker EDD includes at least one rule related to: objective(s), constraint relaxer(s), feasibility obtainer(s), bid adjustment(s), item attribute(s), item adjustment(s), free disposal, action, cost constraint/requirement, unit constraint/requirement, counting constraint/requirement, homogeneity constraint, mixture constraint, cost/unit condition pricing, quote request and reserve price(s).

43. The computer readable medium of claim 24, wherein the instructions further cause the processor to cause an identification of the bidder of said bid to be displayed in step (c) .

44. The computer readable medium of claim 43, wherein the instructions further cause the processor to obscure the display of bidder identification.

45. The computer readable medium of claim 27, wherein at least one rule is introduced into at least one bidder EDD in response to a bidder specifying (i) a precondition of said rule and (ii) an effect to apply if said precondition is satisfied.

46. The computer readable medium of claim 40, wherein at least one rule is introduced into at least one bid taker EDD in response to a bid taker specifying (i) a precondition of said rule and (ii) an effect to apply if said precondition is satisfied.

47. The method of claim 22, wherein the bidder specifies the precondition and the effect via a graphical user interface.

48. The method of claim 23, wherein the bid taker specifies the precondition and the effect via a graphical user interface.

49. The method of claim 22, wherein the bidder specifies the precondition and the effect via a graphical user interface.

50. The method of claim 22, wherein the bid taker specifies the precondition and the effect via a graphical user interface.